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P42222
23 JAN 1976
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Agricultural Memorandum No 759

Change of weather factors with average rainfall

L P Smith

Change of rainfall with height varies considerably over the country, the simplest equation is $0.315R_m - 119$ millimetres per 100 metres where R_m = the average annual rainfall in millimetres of the vicinity. Monthly rainfall averages can be expressed in terms of annual average for specific areas; details were given in Ag Mem 705. Other weather factors can be related to change of rainfall average:-

Grass Drought Factor

The average number of days when grass growth is appreciably reduced by absence of adequate soil moisture increases by $2\frac{1}{2}$ days for every 10 mm increase in the difference between the 6-summer-month averages of Potential Transpiration and Rainfall.

Effective Transpiration during the Growing Season

The ratio, expressed as a percentage, of the effective transpiration to the potential transpiration over the growing season, increases by 4 for every increase of 100 m in height up to an annual average rainfall of 1000 mm; above this rainfall, the increase is 1 per 100 m.

Maximum Actual Summer SMD

The decrease, in mm per 10 mm increase in average summer rainfall is

NW England	2.2	NE England	2.6		
Wales	2.3	Midlands	3.0	E England	2.5
SW England	3.0	SE England	2.0		

Return to Capacity

The average return date becomes earlier for each 10 mm increase in average summer rainfall by the following number of days:-

NW England	2.9	NE England	4.2		
Wales	3.0	Midlands	5.3	E England	7.4
SW England	4.0	SE England	5.5		

Excess Winter Rain

The increase in millimetres for every 10 mm increase in average summer rainfall is:

NW England	26	NE England	22		
Wales	25	Midlands	18	E England	30
SW England	29	SE England	27		

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End of Capacity

The average end of capacity date becomes later for each 10 mm increase in average summer rainfall by the following number of days:-

NW England	1.1	NE England	1.7		
Wales	1.5	Midlands	2.1	E England	3.7
SW England	2.1	SE England	2.7		

Any comments or suggestions on this paper should be referred to the author.

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October 1975